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REMARKS

In the Office Action dated February 25, 2004 the Examiner: (1) rejected claims 22-27 under 35 U.S.C. § 102(e); (2) rejected claims 28-48 under 35 U.S.C. § 103(a); and (3) rejected claim 22 under the judicially created doctrine of obviousness-type double patenting. Applicants have amended claim 22. Claims 23-24, 26-30, 32-34, 36-37, 39-41, 44, and 46 were amended for antecedent basis purposes. No new matter has been added.

Applicants submit that claims 22-48 are currently in condition for allowance. Therefore, Applicants request that the Examiner enter this amendment and issue a Notice of Allowance.

A. Response to the 35 U.S.C. § 102(b) Rejection

Claims 22-27 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,964,952 ("Kunze-Concewitz"). Claim 22 has been amended to clarify that a first supply system and a second supply system are positioned to inhibit liquid from contacting a second part of a substrate.

In claim 22, Applicants recite an apparatus for subjecting a substrate to a localized liquid treatment for cleaning and/or etching the substrate. The apparatus includes support for holding the substrate, a first supply system, and a second supply system. The first supply system is adapted to supply a liquid on a first part of the substrate, while the second supply system is adapted to supply a gaseous tensio-active substance to the second part of the substrate. The second part of the substrate is substantially adjacent to the first part of the substrate. The first and second supply systems are positioned to inhibit the liquid from substantially contacting the second part of the substrate and to cause the liquid and the gaseous tensio-active substance to mix at a boundary

between the first and second part of the substrate creating a mixture having a lower surface tension than the liquid. This mixture further inhibits the liquid from substantially contacting the second part of the substrate. Thus, the liquid is contained in a localized zone of the substrate surface. (See, e.g., Applicants' Specification, Abstract.)

In contrast to Applicants' claim 22, Kunze-Concewitz depicts a first supply system supplying a water film to a contaminated surface (i.e., a first part of the substrate) and a second supply system supplying steam into the water film (i.e., a second part of the substrate). (See, e.g., Kunze-Concewitz, Abstract.) As described by Kunze-Concewitz, the second part of the substrate is a subset of the first part of the substrate. Liquid is located on the second part of the substrate so that vapor bubbles formed by spraying the steam into the liquid can cause particles to be loosened from the surface and then carried away in the water film. (See Kunze-Concewitz, column 6, lines 46-61.)

Kunze-Concewitz's supply systems are not positioned to inhibit the liquid from substantially contacting the second part of the substrate and to cause the liquid and the gaseous tensio-active substance to mix at a boundary between the first and second part of the substrate creating a mixture having a lower surface tension than the liquid, because liquid is needed on the second part of the substrate to perform Kunze-Concewitz's method of cleaning. Accordingly, Kunze-Concewitz's supply systems are positioned to supply the liquid on the second part of the substrate and to cause the liquid and steam to mix throughout the second part of the substrate, not at just a boundary between the first and second part of the substrate. Because Kunze-Concewitz does not show or suggest at least the positioning of first and second supply systems as claimed, Kunze-Concewitz does not show or suggest each and every element of claim 22. Thus, Applicants submit that Kunze-Concewitz does not anticipate claim 22.

Claims 23-27 depend from Claim 22. Accordingly, Applicants also submit that Kunze-Concewitz does not anticipate Claims 23-27.

In light of the above, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102(b).

B. Response to the 35 U.S.C. § 103(a) Rejection

Claims 28-48 were rejected under 35 U.S.C. § 103(a) as being obvious in light of the combination of Kunze-Concewitz and U.S. Patent No. 5,749,413 ("Crowe"). Claims 28-48 depend from claim 22. As described above, Kunze-Concewitz does not show or suggest that the first and second supply systems are positioned to inhibit the liquid from substantially contacting the second part of the substrate and to cause the liquid and the gaseous tensio-active substance to mix at a boundary between the first and second part of the substrate creating a mixture having a lower surface tension than the liquid. Crowe fails to overcome this deficiency in Kunze-Concewitz.

Crowe teaches a power electronics package that includes a heat exchanger. (See e.g., Crowe, Abstract.) Crowe does not discuss wafer cleaning, liquid removal from a substrate, or the positioning of a second supply system. Thus, Crowe does not teach that the first and second supply systems are positioned to inhibit the liquid from substantially contacting the second part of the substrate and to cause the liquid and the gaseous tensio-active substance to mix at a boundary between the first and second part of the substrate creating a mixture having a lower surface tension than the liquid. Accordingly, Applicants submit that claims 28-48 are not obvious in light of the combination of Kunze-Concewitz and Crowe.

In light of the above, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103(a).

C. Response to the Double Patenting Rejection

Claim 22 was rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 of U.S. Patent No. 6,334,902 ("Mertens"). The Office Action states that while Mertens does not explicitly disclose a second supply system to supply a gaseous substance, it would have been obvious that the heat source will create a gaseous substance. (Office Action, page 4). Claim 22 has been amended to clarify that the first and second supply systems are positioned to inhibit the liquid from substantially contacting the second part of the substrate and to cause the liquid and the gaseous tensio-active substance to mix at a boundary between the first and second part of the substrate creating a mixture having a lower surface tension than the liquid. Accordingly, Applicants believe that the double patenting rejection of claim 22 is moot.


In light of the above, Applicants respectfully request withdrawal of the rejections under the judicially created doctrine of obviousness-type double patenting.

CONCLUSION

In light of the above amendments and remarks, Applicants submit that the present application is in condition for allowance and respectfully request notice to this effect. The Examiner is requested to contact Applicants' representative below if any questions arise or she may be of assistance to the Examiner.

Respectfully submitted,

Date: April 23, 2004

By: 

Lisa M. Schoedel

Reg. No. 53,564

McDonnell Boehnen Hulbert & Berghoff LLP

300 South Wacker Drive

Chicago, Illinois 60606-6709

312 935 2362

schoedel@mbhb.com



Hon. Commissioner of
Patents and Trademarks

S/N: 10/074,706

Atty: LMS

Re: Applicant - Mertens, et al.

Case No. 98,475-B1

Method and Apparatus for Localized Liquid Treatment of the Surface of a Substrate

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Attorney for Applicant

